III. REMARKS

In the Office Action, Claims 1 and 11 were rejected under 35 U.S.C. 103 as being unpatentable over Zimmermann (US 6,704,310) in view of Tsai (US 6,750,909), and claims 1-9, 11-17 and 19-22 were rejected under 35 U.S.C. 103 as being unpatentable over Zimmermann in view of Prentice (US 2003/0,030,729) for reasons set forth in the Office Action.

Claim 20 is amended to provide for antecedent basis for the "bus" mentioned in the claim. The claims have not been amended otherwise because it is believed that an attempted combination of the teachings of the cited art cannot produce the beneficial results of the claimed subject matter. New claims are presented for further definition of the invention.

The following argument is presented to distinguish the present claims from the teachings of the cited art, thereby to overcome the foregoing rejections and to show the presence of allowable subject matter in the claims.

Zimmerman describes a method and an apparatus for the transmission of data between a camera module and an electronic device. Statistical data is collected by a digital signal processor 50 in digital circuitry 48 from the image data in the camera module. The statistical data is suitable for processing an image to be generated. Thus, in Zimmermann, there can be no showing of the transmission of the statistical data from the collector 306 (present Fig. 1) via an interlace 320 over an interface 310 from a camera module 301 to the electronic device 302 (present Fig. 1). Zimmermann, therefore, does not show a basic aspect of the presently claimed subject matter.

Tsai teaches an image processing system (digital camera) wherein functions of focusing, exposure control and white balance of the photographed image data are done by computing image statistics based on image data in a data processor.

Prentice presents a camera system comprised of a camera and a host computer. The host computer controls the picture taking process of the camera. Picture processing is done in the host computer. Also, statistical analysis (LUT, lookup tables) of the pictures is performed in the host computer. The control block in the host computer is periodically called to automatically adjust the camera exposure.

In the analysis of Zimmermann, the examiner sets forth features which are alleged to be common with the claimed subject matter. The examiner observes that Zimmermann fails to explicitly disclose a means for adjusting, on the basis of the statistical data, the image sensor of the camera module for generating image data for a next image. To obtain such disclosure, the examiner relies on Tsai who teaches that the functions of focusing, exposure control, and white balance of photographed images are accomplished by computing image statistics based on image data in a processor (col. 3 at lines 48-55). However, the image processing system of Tsai is a device (digital camera) that does not transmit any data.

It is believed that an attempted combination of the teachings of Tsai with Zimmermann would lead to a camera module that has automatic adjustment controls based on image statistics, and that all calculations and camera instructions would be done in the camera module. One skilled in the art would be able to provide automatic camera instructions inside the camera module because the camera module already contains a digital signal processing unit. The data transmission in the Zimmermann device is done with USB. A sending of instructions from a host at regular intervals would slow the picture transmission from the camera module to the host.

In the attempted combination of the teachings of Zimmermann with Prentice, the examiner observes that Zimmermann fails to explicitly disclose a means for adjusting, on the basis of the statistical data, the image sensor of the camera module for generating image data for a next image. The examiner opines that Prentice teaches an

imaging device wherein automatic exposure control modifies contrast and brightness setting bases on a luminance histogram of previously captured images [0057]. The examiner states further that Prentice teaches a host computer 12 that controls a camera picture-taking process by setting the exposure time via a CCD timing generator 32 from microprocessor 38 [0024].

Upon study of the Prentice teachings, it is appreciated that Prentice describes an imaging system that comprises a digital camera, a host computer, and software for processing images from the digital camera on the host computer, wherein the camera functions as a still camera and as a video camera. The camera is connected to the host computer by USB. All picture processing including statistical data collecting is done in the host computer. Prentice states [0057] that the control block 112 also modifies the lookup tables 110 and the matrix 114 based upon the output of the auto-exposure and auto-white balance (AWB) control modules. The automatic exposure control modifies the contrast and the brightness settings based on a luminance histogram of the previously captured images. The AWB module calculates the auto-white balance settings that are added to the user specific white balance settings.

These teachings of Prentice relate to operations that are performed in the host computer in the processing paths for processing images in the host computer. It is clearly stated that the automatic exposure control modifies the contrast and the brightness settings. These settings are based on a luminance histogram of the previously captured images [0057]. These contrast settings are used in the processing paths when processing images in the host computer. Prentice states that these paths are controlled by the same set of automatic or user adjusted parameters [0025]. Prentice says that among theses parameters are white balance and brightness [0025]. Thus, it is clear that the automatic exposure control module and the AWB module (disclosed in [0057]) are needed for image processing, and are not employed for camera control.

In Fig. 7 of Prentice, it is disclosed that the image control block 112 has an input from sub-sampled RGB (red, green, blue) which is corrected, relative to defects from camera and parameters that control processing paths. These parameters are automatic and user-input control parameters. According to Prentice, these user-input parameters are brightness, contrast, hue and saturation, and the automatic controls include auto-white balance and auto-exposure [0057]. Prentice states that the control block 112 is called upon by the video capture driver periodically to automatically adjust the camera exposure [0056]. But Prentice fails to explain where the control block 112 obtains the information to change the camera exposures. It must be assumed that at least part of the information must come from the user.

It is urged that, due to the foregoing observations, Prentice has not fully disclosed what information is being used to control the camera. Furthermore, Prentice is controlling the camera only periodically, rather that continuously. Therefore, this reference does not provide an adequate suggestion to modify the system of Zimmermann so that the statistical data for adjustment of the image sensor of the camera is available for use in the generation of image data for a next image.

Accordingly, it is urged that the present argument has overcome the grounds of rejection under 35 U.S.C. 103.
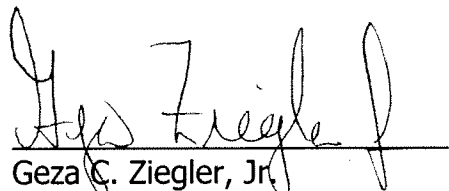
For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and are in proper form for allowance. Accordingly, favorable reconsideration and allowance is respectfully requested. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

The Commissioner is hereby authorized to charge payment of $416 for increasing the total number of claims by eight and for any other fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,

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